REMARKS

The foregoing amendments and these remarks are in response to the Office Action dated December 13, 2007. This amendment is filed with an extension of time request, and authorization to charge the appropriate fees therefor to Deposit Account No. 50-0951.

At the time of the Office Action, claims 1-20 were pending in the application. Claims 13 and 14 were withdrawn from consideration. In the Office Action, claims 1-12 and 15-20 were rejected under 35 U.S.C. §112. Claims 1-4 , 6-8, 17 and 20 were rejected under 35 U.S.C. §102(b). Claims 1-4 , 8-12, 15 and 16 were rejected under 35 U.S.C. §102(b). Claims 5, 18 and 19 were indicated to be allowable if rewritten to overcome the rejections under 35 U.S.C. §112, second paragraph, set forth in the Office Action and to include all of the limitations of the base claim and any intervening claims. The objections and rejections are discussed in more detail below.

I. Election of Species

Regarding section 1 of the Office Action, Applicant respectfully disagrees with the Examiner about whether claim 13 should be examined. The rounded side wall (reference numeral 75) in figure 11 has the cross-sectional shape of a semicircle, which is one of the alternatives given in claim 13. If a claim encompasses two or more of the disclosed embodiments, it should be designated a generic claim (see MPEP §806.04(e)), and should therefore be examined as a generic claim along with any of the other elected claims. Otherwise, a claim covering embodiments disclosed in more than one Species could never be examined. Thus, in Applicant's view, claim 13 is generic to both Species I) and Species II) and given that Species I) was elected and Applicant already asserted that claim 13 reads on Species I), Applicant respectfully requests reconsideration and examination of claim 13.

II. Request for Information Under 37 CFR §1.105

With regard to section 2 of the Office Action, as far as is known by Applicant, the geometries shown in figures 11 to 15 are new in the field of multiblade drilling tools under discussion (i.e. having at least two internal supply channels and corresponding external chip

removal channels).

Please note that this type of drilling tool is quite different in construction from conventional twisted drilling tools, such as shown in most references cited by the Examiner, e.g. US 542, 223 (Johnson), US 472,541 (Johnson), US 390,672 (Holmes), US 329,174 (Johnson) or US 129,543 (Ells). Please note that these drilling tools are different from the multiblade drilling tools defined in the present claims at least by the fact that there are no cooling lubricant supply channels in addition to chip removal channels. In contrast, various Japanese references cited in the information disclosure statement filed by Applicant considered by the Examiner with date 8-17-07 (citations N, O, P, Q, R, S, T on page 1 and N, O on page 2) as well as US 4,137,002 (Barker et al.) show multiblade drilling tools of the type of interest here, having two internal supply channels for cooling lubricant, and associated external removal channels formed by cutouts (or flutes) on the outside of the drilling tool. It appears evident that the geometries shown in figures 11 to 15 of the present application differ from the geometries shown in those references.

III. Claim Rejections under 35 U.S.C. §112

Claims 1-12 and 15-20 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Appropriate corrections are made herein, and Applicant respectfully requests that this rejection be withdrawn by the Examiner.

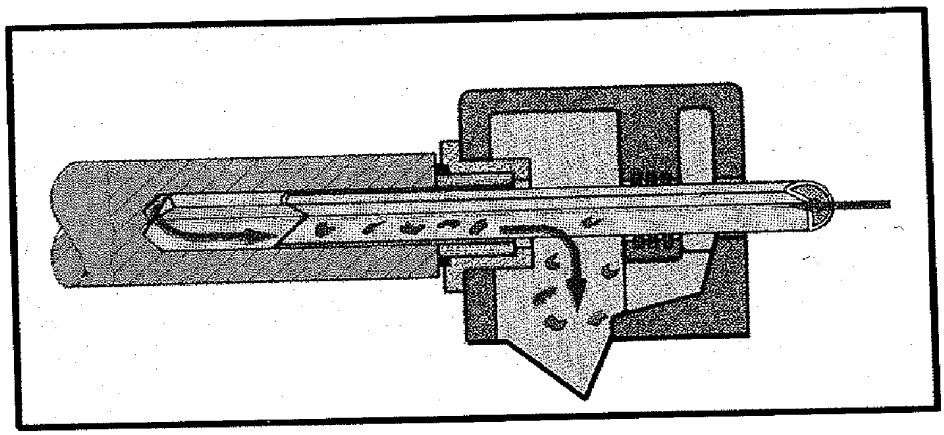
IV. Rejection based upon Art and Allowable Subject Matter

Claims 1, 4, 7 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by SU 569401 to Galustyan et al. ("*Galustyan*"). Claims 1-4, 6 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by SU 854608 to Airikyan et al. ("*Airikyan*"). Claims 1-4, 6-8, 17 and 20 were rejected under 35 U.S.C. §102(b) as being anticipated by SU 1148721 to Silin ("*Silin*"). Claims 1-4, 6-8 and 20 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,006,021 to Wheetly ("*Wheetly*"). Claims 1-4, 8-12, 15 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,529,340 to O'Dell ("*O'Dell*") in view of U.S. Patent No. 4,137,002 to Barker et al ("*Barker*").

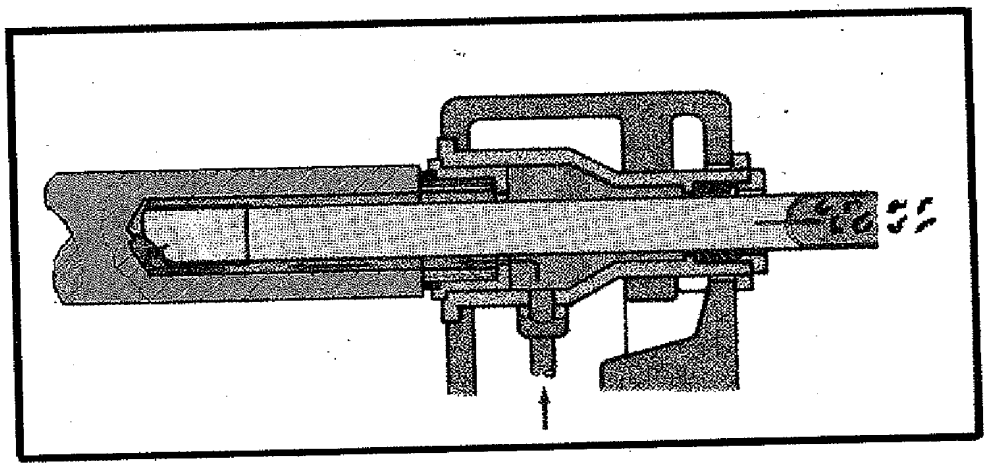
The multiblade drilling tools used in the claimed drilling device correspond to a certain class of drilling tools generally as shown in the Japanese documents mentioned above, and *Barker*. The drilling tools are clearly distinguished from conventional twist drills at least by the fact that there are at least two supply channels within the body of the drill configured to supply cooling lubricant from the spindle-side end of the drilling tool towards the cutting zone at the front-side end of the drilling tool. Multiblade drilling tools of this type further have dedicated removal channels for removing cooling lubricant and chips from the cutting zone, where the removal channels are not identical to the supply channels and the removal channels are formed by cutouts or flutes on the outside of the body of the drilling tool. Amended claim 1 filed herewith is intended to make these differences between the different drilling tool classes clearer. Support for the amendments is mainly found in paragraph [0024] of the specification and in the drawings. Further, paragraph [0006] of the specification explains the function of those tools corresponding to their structure.

In order to further distinguish the multiblade drilling tools of the present claims from other types of drilling tools, such as those shown in the Soviet references cited by the Examiner, Applicant respectfully requests the Examiner to consider the following information, which is taken from a textbook self-published by the inventor of the present application, entitled "Tiefbohren. Praxis – Bohren mit Einlippentiefbohrwerkzeugen". The following information explains three fundamentally different systems for deep drilling, as understood by Applicant.

The first figure shown below is concerned with the technology "Einlippen-Tiefbohren", which corresponds to the English term "gundrilling". The technology of "gundrilling" (Einlippen-Tiefbohren) is characterized by the fact that the cooling lubricant is supplied internally (through one or more supply channels going though the body of the tool) whereas the chip removal is carried out externally (through one or more external removal channels formed by flutes or cutouts the outside of the tool). The arrows in the figure show the supply of cooling lubricant and the chip removal.

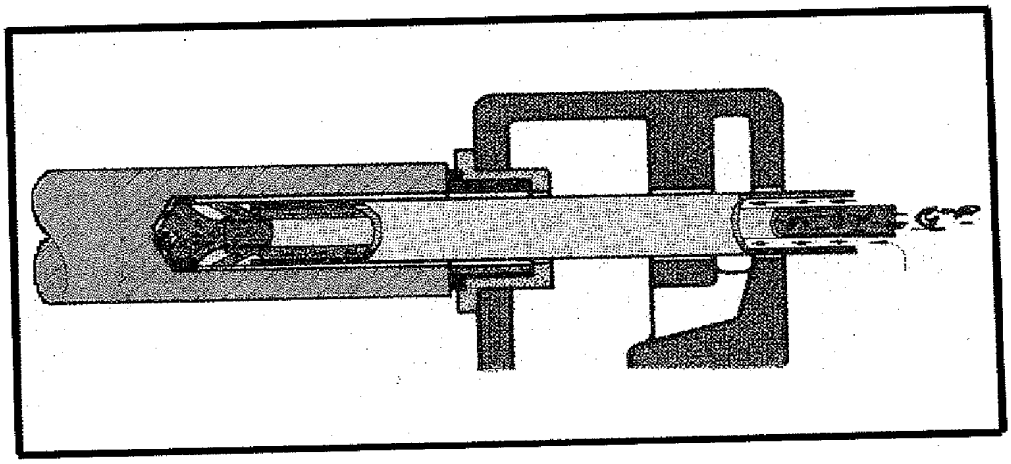


The second figure, shown below, corresponds to the technology "BTA-Tiefbohren", which may be translated to "Single-Tube-System". In contrast to the first system illustrated above, the Single-Tube-System (BTA-Tiefbohren), is characterized by the fact that the cooling lubricant is supplied externally (along the outside of the tool) and that there is an internal chip removal channel in the tubular tool. As with the previous figure, the arrows show the supply of cooling lubricant and chip removal.



The third figure corresponds to "Ejektor-Tiefbohren", which corresponds to "Double-Tube-System". The Double-Tube-System (Ejektor-Tiefbohren) in the lower figure has yet another tool construction. The tool has an internal tube and an external tube, and a space

between the internal and external tube forms the supply channel. Chip removal is also carried out internally through the internal tube of the double-tube system.



The present application is only concerned with the first technology, namely gundrilling (Einlippen-Tiefbohren) having internal supply channels and external removal channels. The amended claim 1 is intended to cover this basic concept

Turning now to the differences between the claims and the references, Applicant notes that *Galustyan* shows a deep drilling tool basically constructed as Single-Tube System (BTA-Tiefbohren) having an external lubricant supply and a single internal removal channel formed by axial hole 5. It is believed that closed channel 4 provides an additional internal supply channel to cause something like the ejector effect also utilized in the Double-Tube-Systems (Ejektor-Tiefbohren) to support chip removal. Therefore, this tool uses concepts of both Single-Tube-Systems and Double-Tube-Systems. *Galustyan* does not teach the provision of at least two external removal channels, as in the system recited in amended claim 1.

Airikyan discloses a Double-Tube-System with internal chip removal. According to the abstract the drill comprises a hollow boring bar providing a single internal chip removal channel. Therefore, this reference is concerned with an entirely different technology to that recited in the present claims.

Silin is another example of a drilling device having a drilling tool designed for internal chip removal. As evident from figure 5, the chips are removed through internal channel b from the

cutting zone towards the spindle-side end. All embodiments shown in figures 2 to 4 have an internal removal channel.

The examiner does not comment on the other Soviet references SU 1077718 to Ivanov et al. ("*Ivanov*") and SU 1611595 to Denisenko et al. ("*Denisenko*"). However, in brief, it is believed that these references are not particularly relevant. Specifically, *Ivanov* shows another example of a drilling tool having a single internal chip removal channel 10. *Denisenko* appears to not have external chip removal channels formed by cutouts on the outside of the drilling tool. Further, there is no mention that the supply channels 3 for coolant could be associated with independent cooling lubricant devices. Note that channels 7 issuing into cavity 8 are provided to guide compressed air to the cutting zone, therefore these channels are not connected to a cooling lubricant device.

With regard to the rejections based on *Wheetly* in section 8 of the office action, it should be clear that the drilling tool of *Wheetly* does not have at least two separate independent supply channels by means of which cooling lubricant is supplied to the cutting zone, and which pass through the drilling tool. It is evident from figure 2 and associated description (column 5, lines 39 *et seq.*) that there is only one longitudinal passage 56 though the tool, which branches off into two discharge ports 62, 63 near the tip of the tool. Therefore, the discharge ports 62, 63 cannot be provided independently with cooling lubricant, as is the case in the drilling device according to the present claims.

With regard to the obviousness rejection in section 10 of the Office Action, it appears that the disclosure of *O'Dell* has been misinterpreted. In lines 5 and 6 of section 10 the Office Action states (emphasis added):

"as stated at column 3, lines 40+, the coolant is supplied to a conventional drill bit <u>having fluid passageways</u>"

However, the cited passage actually reads:

"The coolant is fed to a conventional oil hole drill which has a <u>longitudinal passageway</u> extending axially therein having an opening at the tip of the drill through which the coolant fluid ultimately passes to cool both the drill and the work piece with which the drill is engaged" (emphasis added).

Therefore, *O'Dell* is concerned with a drilling method and apparatus operating with a drilling tool having one single longitudinal passageway. This is also clear from the figures and

corresponding description of *O'Dell*. The supply systems from the various reservoirs for oil and pressurized air each lead through check valves 28, 29 to a junction 25 having a single outlet towards the machine tool 15. Therefore, there is only one line from the supply system to the machine tool. It would be contrary to the teaching of *O'Dell* to combine such supply system with a tool having two or more separate supply channels for cooling lubricant, such as shown in *Barker*.

In summary, it is believed that the invention as defined in amended claim 1 is both novel and non-obvious over the prior art, and as such, that claim 1 is in condition for allowance. Claims 2-4, 6-13, 16-17, 19-20 and new claims 21-25 which all depend from claim 1 are also believed allowable because of their dependence upon an allowable base claim, and because of the further features recited. Claims 5 and 18 were previously indicated to be allowable if rewritten in independent form, and as they have been duly rewritten, these claims are also believed allowable. Claim 14 was withdrawn from consideration but rejoinder and allowance of this claim is requested upon allowance of claim 1. New claim 26 has been added, dependent upon claim 14. Claim 15 is cancelled herein.

V. Conclusion

Applicants have made every effort to present claims which distinguish over the prior art, and it is thus believed that all claims are in condition for allowance. Nevertheless, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicants respectfully request reconsideration and prompt allowance of the pending claims.

Respectfully submitted,

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